

E1
concluded

28. The process according to Claim 21, wherein a desired product selected from group consisting of 1-chloro-1,1-fluoroethane, 1,1-difluoroethane, and mixtures thereof is withdrawn continuously from the reaction mixture.

29. The process according to Claim 28, wherein said desired product is 1,1-difluoroethane in gaseous form.

REMARKS

Pursuant to 37 C.F.R. 1.111 reconsideration of the Official Action dated February 4, 1997 is respectfully requested.

New claims 21 to 29 are presented to better define the subject matter which Applicants regard as their invention. Basis for these new claims is found in the specification inter alia at page 2, lines 23 to 31, and page 4 and in original claims 6 to 10. For the reasons discussed below, applicants respectfully submit that claims 21 to 29 are free of the prior art.

The Examiner's attention is respectfully directed to the Preliminary Amendment filed March 20, 1996, a copy of which is enclosed. Applicants respectfully request the Examiner to consider the enclosed Preliminary Amendment, and make it of record.

Relying on 35 U.S.C. §103 the Examiner has rejected claim 1 to 20 alleging the subject matter thereof would have

been obvious to a person of ordinary skill in the art, at the time applicants made their invention, in view of the disclosures of U.S. Patent No. 5,008,474 to Walraevens considered together with published international application WO 89 12614 to Rao and a publication by Lovelace. Applicants respectfully traverse the Examiner's rejection, and request for reconsideration. The Examiner's attention is respectfully directed to Applicants' Remarks in the Preliminary Amendment filed March 20, 1996 (copy enclosed) at pages 2 to 8 (copy enclosed). Applicant's remarks concerning Walraevens and Rao set forth in enclosed Preliminary Amendment are incorporated herein by reference.

Lovelace discloses the reaction of vinyl chloride with hydrogen fluoride to produce 1-chloro-1-fluoroethane (see page 13). Lovelace indicates that the use of excess hydrogen fluoride may result in 1,1-difluoroethane product. Lovelace also discloses the reaction of vinylidene chloride with hydrogen fluoride to produce 1,1-dichloro-1-fluoroethane, 1-chloro-1,1-difluoroethane, and 1,1,1-trifluoroethane (see the top of page 14). Applicants respectfully submit that Lovelace cannot reasonably be interpreted as disclosing that vinyl chloride **is analogous** that is that it behaves similarly in all respects, to vinylidene chloride in hydrofluorination processes. Applicants respectfully submit that **vinyl chloride is far more reactive than vinylidene chloride**, and thus

has a far greater tendency than vinylidene chloride to form heavy by-products by oligomerization. The Examiner's attention is respectfully to the Preliminary Amendment filed March 20, 1996 (copy enclosed) at pages 5 and 6.

Applicants respectfully submit that a person of ordinary skill in the art not aware of their invention considering inter alia reactivity thermo dynamics, and kinetics would find nothing in Lovelace to support the Examiner's statement "that vinyl chloride is an analogous to vinylidene chloride in typical hydroflorination procedures." Applicants respectfully submit that the Examiner reasoning is based simply on the structural analogy between vinyl chloride ($\text{CH}_2=\text{CHCl}$) and vinylidene chloride ($\text{CH}_2=\text{CCl}_2$). A person of ordinary skill in the art would certainly **never** assume that, based on structural analogy alone, these compounds behave similarly when reacted with hydrogen fluoride. Applicants respectfully submit that the Declaration filed on March 24, 1995 contains impressive **objective evidence** of the different behavior of these two compounds. Applicants note that the Examiner has not commented on this Declaration in his remarks. The Declaration therefore represents **evidence** which stands in direct contradiction to the Examiner's opinion. For the Examiner's convenience, an additional copy of the Declaration is attached hereto.

The present invention provides an improved process for making 1-chloro-1-fluoroethane and/or 1,1-difluoroethane from vinyl chloride and hydrogen fluoride while, at the same time avoiding the unwanted formation of heavy halogen-containing side products as described in the specification at page 2, lines 23 to 31, and set forth in new claim 21. Applicant respectfully submit that this important feature of the invention is neither disclosed or suggested in any of the references.

In summary, Applicants respectfully submit that the disclosure of Walraevens is strictly limited to vinylidene chloride. Applicants also respectfully submit that the secondary references neither disclose nor suggest that vinyl chloride is analogous in all respects to vinylidene chloride in typical hydrofluorination procedure. Finally, none of the references disclose or suggest any process which reduces formation of heavy halogen-containing side products. Applicants therefore respectfully submit that their claims could not have been obvious in view of the reference disclosures. Applicants therefore respectfully request the Examiner to reconsider and withdraw the rejection of the claims under Section 103.

In view of the above amendments, and for the reasons discussed, Applicants respectfully submit their application is now in condition for allowance. The Examiner is respectfully requested to call the undersigned attorney if any minor matter remains.

Respectfully submitted,



John W. Schneller
(Registration No. 26,031)
SPENCER & FRANK
Suite 300 East
1100 New York Avenue, N.W.
Washington, D.C. 20005-3955
Telephone: (202) 414-4000
Telefax : (202) 414-4040

JWS:vtm